

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 50147/IR	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/FI00/00581	International filing date (day/month/year) 28.06.2000	Priority date (day/month/year) 29.06.1999
International Patent Classification (IPC) or national classification and IPC ₇ C 01 G 51/04		
Applicant OMG Kokkola Chemicals Oy et al		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 1 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 24.01.2001	Date of completion of this report 17.09.2001
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. 08-667 72 88	Authorized officer Jan Carlerud/ELY Telephone No. 08-782 25 00

Form PCT/IPEA/409 (cover sheet) (January 1998)

Claims

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1. Cobaltous hydroxide or alloy hydroxide formed of cobalt and some other metal, **characterised** in having a density of about $0.5-2.2 \text{ g/cm}^3$, a particle size above about $1 \mu\text{m}$, typically about $1-20 \mu\text{m}$, and a specific surface of about $0.5-20 \text{ m}^2/\text{g}$, and that it is prepared by adding a complexing agent and hydroxide ion under alkaline conditions to an aqueous chloride solution of cobalt or to an aqueous chloride solution of an alloy of cobalt and some other metal in order to form metal hydroxide, wherein the complexing agent is selected so as to form an ammonium complex with the metal ion, the molar ratio of complexing agent to metal being approx. 0.5-3 and the pH being adjusted in the range 10-13.
2. A cobaltous hydroxide or alloy hydroxide formed of cobalt and some other metal as defined in claim 1, **characterised** in that the pH is regulated in the range 11.2-12.0.
3. A cobaltous hydroxide or alloy hydroxide formed of cobalt and some other metal as defined in claim 1, **characterised** in that the other metal is nickel, manganese, magnesium or aluminium, or alloys of these.
4. A cobaltous hydroxide or alloy hydroxide formed of cobalt and some other metal as defined in claim 1, **characterised** in that the concentration of the chloride solution is in the range from 10 to 120 g/l calculated on the total metal content.
5. A cobaltous hydroxide or alloy hydroxide formed of cobalt and some other metal as defined in claim 1, **characterised** in that the complexing agent is ammonium sulphate or aqueous ammonia.
6. A cobaltous hydroxide or alloy hydroxide formed of cobalt and some other metal as defined in claim 1, **characterised** in that the molar ratio of complexing agent to metal is approx. 1.5-2.
7. A cobaltous hydroxide or alloy hydroxide formed of cobalt and some other metal as defined in claim 1, **characterised** in that NaOH is used for pH regulation.
8. A cobaltous hydroxide or alloy hydroxide formed of cobalt and some other metal as defined in claim 1, **characterised** in that the reaction is carried out at a temperature of about $40-90^\circ\text{C}$.
9. A cobaltous hydroxide or alloy hydroxide formed of cobalt and some other metal as defined in claim 8, **characterised** in that the reaction is carried out at a temperature of about 70°C .

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/FI00/00581

I. Basis of the report

1. With regard to the elements of the international application:*

- ☐ the international application as originally filed
- ☒ the description:
 pages 1-6, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☒ the claims:
 pages _____, as originally filed
 pages _____, as amended (together with any statement) under article 19
 pages _____, filed with the demand
 pages 7, filed with the letter of 07.08.2001
- ☒ the drawings:
 pages 1, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language English which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☒ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheet/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2 (c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims	<u>1-9</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-9</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-9</u>	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

Documents cited in the International Search Report:

A) US 5569444 A

B) US 5057299 A

This Report refers to the amended claims filed 7 August 2001.

The present invention relates to a hydroxide of cobalt or of cobalt and some other metal. It is intended to provide a product with high density and a large particle size.

Document A describes a hydroxide of cobalt, nickel and cadmium or zinc and its production. The main metal is nickel and the proportion of cobalt in the hydroxide is 1-8%. Ammonium ions are added to a solution of nitrates or sulphates of said metals in an amount such that the ratio of complexing agent to metal is approximately within the interval 0,5-3 specified in claim 1. The temperature is maintained between 80 and 85 degrees centigrade and the pH is regulated to a value of 9,2 +/- 0,1.

The present claim 1 does not specify the proportions of the metals in the hydroxide. However, it specifies the product as "cobaltous hydroxide or... of cobalt and some other metal". Thus, the invention is different from what is disclosed in A in that the main metal in the hydroxide is cobalt. Furthermore, the pH is 10-13 and the mixture is not heated.

Document B, which is cited in the description, is cited as a further example of prior art technique.

Therefore, the claimed invention is novel.

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Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: V.

In view of what is disclosed in the cited documents, the cobaltous hydroxide cannot be considered to be obvious to a person skilled in the art. Therefore, the invention is considered to involve an inventive step. It is also considered to be industrially applicable.